

## THE AUSTRALIAN SPECIES OF *GRAPHOMYIA* (DIPTERA, MUSCIDAE).

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The genus *Graphomyia* R.-D. includes a fairly compact assemblage of flies, which for the most part have a superficial resemblance to large and ornate species of *Musca*. Like that genus, the greatest number and variety of species are found in the tropical parts of the old world, nine of the twenty-two species at present recognized being African and nine Oriental. The genotype, *G. maculata* Scop., is the only one which is widespread, being recorded from Europe and Africa and represented by a subspecies in the Oriental and Australasian regions. One species has been described from Mexico and one from Chile.

In the Oriental region, one species, *G. luteicornis* Senior-White, occurs in Ceylon; one, *G. maculata rufitibia* Stein, in Formosa; two, *G. fascigera* Stein and *G. atripes* Malloch, in Sumatra; four, *G. maculata rufitibia* Stein, *G. mellina* Stein, *G. vittata* Stein and *G. adumbrata* Wied., in Java; and two, *G. confluens* Stein and *G. rufiventris* Stein, in Ceram. No species, so far as I can discover, has been recorded from India. The distribution indicated is suggestive, but practically all the species are rare and it would not be safe to discuss the zoogeography of the group until a great deal more collecting has been done in various parts of the region.

Only one species, *G. eximia* Stein from New Guinea (*Nova Guinea*, xiii, Zool., 2, 1919, 199), has been described from the Australasian region. Malloch (these PROCEEDINGS, 1 (2), 1925, 46) states that he has seen a species from Australia, but gives no details concerning it. I have only seen the two species which are described below. It is clear that the genus entered Australia from the north, probably at a relatively recent date, and that it represents the "tail" of a widespread Malayan distribution.

Nothing is known of the biology of any of the species except *G. maculata* Scop., the larvae of which are saprophagous.

I am indebted to Mr. F. H. Taylor for the loan of the specimens recorded below from his own and the Ferguson collection, and to Dr. A. B. Walkom and Mr. A. Musgrave for copies of descriptions which would otherwise not have been available to me.

### Genus *GRAPHOMYIA* R.-D.

The Australian species of *Graphomyia* may be distinguished from other Muscinae by the following characters: propleura, prosternum and mesopleura bare; hypopleura with fine hairs on upper part below and anterior to spiracle; acrostichal bristles reduced to one pre-scutellar pair; cell  $R_2$  rather widely open and vein  $M_1$  (distal section of  $M_{1+2}$ ) with a rounded bend.

### *GRAPHOMYIA MACULATA RUFITIBIA* Stein.

The specimens before me agree very well with Stein's description of *G. rufitibia* Stein from Formosa and Java (*Ann. Mus. Nat. Hung.*, xvi, 1918, 147).

He had at first considered that his specimens represented a variation of *G. maculata* Scop., but later, because of their constantly slightly smaller size and more definite markings, he described them as a distinct species. There is a female of the typical form of *G. maculata* Scop. from France in the Ferguson collection. It does differ from the Australian specimens, but so slightly that I can only regard them as worthy of subspecific rank. I have reduced Stein's name accordingly. I give a description, based on Australian material, to facilitate identification by Australian workers.

♂. Eyes separated by about one-eighth of head-width, densely covered with short fine pale-brown hairs; frons black, parafrontals and parafacials shining silvery-white.

Thorax greyish-white, with an elongate-triangular median black stripe from suture to scutellum, a pair of slightly divergent narrow submedian black stripes extending from anterior end of thorax to a point mid-way between suture and scutellum, and a broad pair of sublateral black stripes which do not extend quite to anterior margin or to scutellum, and are narrowly interrupted at suture. Scutellum greyish-white, with a broad median black patch and black side margins. Pleurae covered with ashy tomentum, bristles and hairs black.

Abdomen covered with silvery tomentum. First visible tergite with a median black vitta which does not quite reach the hind margin, and with a broad sickle-shaped brown patch on each side extending along lateral and posterior margins but not reaching mid line. Second tergite with a narrow incomplete median black vitta and large sublateral brown patches. Third tergite with a narrower median black vitta, with a large black spot near the posterior edge on each side, and with brown sublateral patches extending the full length of tergite. Fourth tergite mostly covered with silvery tomentum, but with irregular submedian brown patches. Ventral aspect of tergites silvery and pale yellow; sternites silvery.

Legs with femora black, covered with ashy tomentum; tibiae brown; tarsi black. Wings faintly yellowish, veins bright brown; bristles on  $R_{4+5}$  extending from base two-thirds of way to r-m above and one-third of way to r-m below. Length, 7.5 to 8 mm.

♀. Eyes finely and rather scantily pubescent, separated by about one-third of head-width; frons black, with a median grey stripe commencing at the sides of the ocellar triangle and narrowing towards the antennae. Parafrontals and parafacials creamy-white. Thorax more yellowish than in ♂, but otherwise similar.

Abdomen covered with greyish-white tomentum and bearing the following brownish-black marks: first visible tergite with a median triangular vitta not reaching the apex of the segment, and with broad sickle-shaped patches extending from the lateral margins almost to mid line close to but not touching the posterior border; second tergite with a median lozenge-shaped vitta and irregular submedian and sublateral stripes extending from the anterior to the posterior border of the segment; third tergite with a narrow median vitta, submedian posterior black spots, and broad irregular sublateral patches extending the length of the segment; fourth tergite with small irregular patches. Insertion of abdominal hairs marked by small brownish-black spots, which are more conspicuous than in ♂. Venter, legs and wings as in ♂. Length, 7.0 to 7.5 mm.

One ♀ from Broadwater, New South Wales, differs from the others in the more strongly contrasted abdominal markings, but is otherwise similar.

*Distribution*: Brock's Creek, N.A., 22 Apr., 1929, T. G. Campbell, 1 ♂, 1 ♀, the latter labelled "caught on fresh horse manure"; Cairns, N.Q., A. P. Dodd, 1 ♀, labelled "ex corn"; Townsville, N.Q., F. H. Taylor, 2 ♀♀; Broadwater, N.S.W., Sept., 1928, D. S. North, 1 ♀; Nyngan, N.S.W., J. W. T. Armstrong, 1 ♂ (coll. Ferguson); Sydney, N.S.W., 8 Jan., 1923, Ferguson, 1 ♀ (coll. Ferguson); Wahroonga, near Sydney, N.S.W., 20 Nov., 1926, Ferguson, 1 ♀ (coll. Ferguson).

GRAPHOMYIA CAMPBELLI, n. sp.

A small, distinctively marked species, which appears to be nearest to *G. fascigera* Stein from Sumatra (*Tijdschr. Entom.*, lxii, Suppl., 1920, 66), from which it is, however, abundantly distinguished by the absence of any dark spot on the squame, by the presence of two posterior sterno-pleural bristles, by the entirely dark legs and by the abdominal markings.

♂. Eyes separated by about one-twelfth of the head-width, densely covered with pale brown hairs, which are longer than those of *G. maculata rufitibia* Stein. Frons black, linear above and widening to a narrow triangle above the antennae; frontal bristles eight, ending about three-fifths of distance from lower end of frons, interspersed with fine black hairs which extend the full length of frons. Parafrontals and parafacials white. Antennae brownish-black, third segment slightly paler; arista dark brown. Face dark brown, covered with ashy tomentum; cheeks with a brown patch near anterior margin, remainder ashy with a yellowish patch below the brown patch; two strong bristles at vibrissal angle and another just above; cheeks with numerous strong black hairs. Proboscis and palpi dark brown to black. Occiput black, with a narrow white postocular stripe which widens laterally.

Thorax covered with silvery tomentum, which is so reduced by the black markings as to form narrow dorsocentral and lateral stripes. The median and submedian black stripes of *G. maculata* Scop. are so broadened in this species as to have become almost completely confluent, forming a very broad median stripe, which narrows abruptly to half its anterior width midway between the suture and the scutellum; in certain lights the median area in front of the suture can be seen to be composed of a very narrow black median stripe bordered by grey. The sublateral black stripes are broad and continuous and are not interrupted at the suture. Scutellum covered with silvery tomentum, with a broad triangular black patch covering three-quarters of its extent, and with black side margins. Dorsocentrals 2+4. Pleurae grey, with brown to black patches; bristles and hairs black.

Abdomen orange, with black markings and patches of pale yellow tomentum. First visible tergite blackish-brown, with a faint greyish patch on each side of mid line towards apex. Second tergite with a narrow median black stripe, and with narrow submedian and broader sublateral pale yellowish patches overlying the orange. Third tergite similar to the second, but with, in addition, a pair of apical submedian black spots. Fourth tergite mainly covered with pale yellowish tomentum. Ventral aspects of tergites pale orange and silvery; sternites brown.

Wings hyaline, veins brown; hairs on vein  $R_{4+5}$  restricted to base below, extending one-quarter of distance to r-m above. Squames greyish-white, with creamy borders. Halteres pale yellow. Legs black, femora with some ashy tomentum. Length, 6 mm.

Holotype ♂. Brock's Creek, North Australia, 21 Apr., 1929, T. G. Campbell, in the collection of the Division of Economic Entomology, Canberra.